

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ILLINOIS
EASTERN DIVISION

The Trustees of Purdue)
University,)
)
Plaintiff,)
)
)
v.) No. 20-cv-5443
)
)
Omron Corporation and Omron)
Healthcare Company, Limited,)
)
Defendants.)

Memorandum Opinion and Order

Plaintiff The Trustees of Purdue University ("Purdue") is the owner of U.S. Patent No. 7,014,611 (the "'611 Patent") which describes an oscillometric blood pressure monitor. ECF No. 31-1. In this action, Purdue asserts that several blood pressure monitors made and/or sold by Defendants infringe the '611 Patent. Defendants have moved to dismiss Purdue's complaint, arguing that the '611 Patent is invalid as directed to patent-ineligible subject matter, and that the complaint fails to state a claim under Federal Rule of Civil Procedure 12(b)(6). For the reasons that follow, the motion to dismiss [47] is denied.

I.

Purdue asserts that Defendants' products infringe upon at least eight claims¹ of the '611 Patent. The '611 Patent, invented by Leslie A. Geddes and Rebecca A. Roeder and issued in 2006, describes an oscillometric blood pressure monitor capable of determining systolic blood pressure as a function of maximum oscillation amplitude and mean cuff pressure.

Blood pressure can be measured in many different ways—for example, it can be measured directly by inserting a catheter into a blood vessel, or it can be estimated using a stethoscope to detect heart sounds while an artery is compressed. See ECF No. 31-2 ¶¶ 10-11. Oscillometry is one noninvasive technique for estimating blood pressure in which an inflatable cuff is placed around a patient's appendage, the cuff is inflated to apply pressure, and pressure readings are taken as the cuff deflates. See *id.* ¶ 14. Prior to issuance of the '611 Patent, users of the oscillometric method commonly calculated systolic blood pressure as a fixed ratio of the maximum amplitude of the pressure oscillations measured during cuff deflation. *Id.* at ¶ 15; ECF No. 31-1 col. 4 ll. 57-63. For example, systolic blood pressure might be estimated as 50% of the value of the maximum amplitude. ECF

¹ Specifically, claims 1, 6-8, 10, and 15-17. See ECF No. 31 ¶ 133.

No. 31-1 col. 4 ll. 57-63. This method of calculation is sometimes called the "fixed ratio" technique. ECF No. 31-2 ¶ 15.

The '611 Patent claims an oscillometric blood pressure monitor that calculates systolic blood pressure as a function of both maximum amplitude *and mean cuff pressure*. Using these variables in combination purportedly allows for a significantly more accurate blood-pressure estimation. Claim 1 recites:

An oscillometric, noninvasive blood pressure monitor, comprising:

an inflatable cuff;

a pump connected to said cuff;

a pressure transducer connected to said cuff, said pressure transducer producing a cuff-pressure signal;

means for detecting oscillations in arterial pressure occurring during a transition in cuff pressure between a pressure greater than normal systolic pressure and a pressure less than normal diastolic pressure; and

a blood pressure measurement circuit responsive to said oscillations, said circuit determining the maximum amplitude A_m of said oscillations, identifying mean cuff pressure P_m as the coincident

value of said cuff-pressure signal, and determining systolic pressure as a function of both A_m and P_m .

ECF No. 31-1 cl. 1.²

In December 2017, Purdue filed its original complaint in the U.S. District Court for the Northern District of Indiana, alleging that Defendants' blood pressure products infringed the '611 Patent. ECF No. 1. Defendants moved to dismiss, arguing in part that there was no personal jurisdiction over Defendants in the Northern District of Indiana. ECF No. 15. In June 2018, at the same time it filed its response to the motion to dismiss, Purdue filed an Amended Complaint. ECF Nos. 31, 32. Defendants then moved to dismiss the Amended Complaint, ECF No. 47, and both motions to dismiss were fully briefed.³ In September 2020, Purdue agreed to resolve the personal jurisdiction issue raised by Defendants by transferring the case to this court. See ECF No.

² Claim 6 describes the monitor of Claim 1 where the detecting means is coupled to the pressure transducer and detects the pressure oscillations as oscillations in the cuff-pressure signal. ECF No. 3-1 cl. 6. Dependent claims 7 and 8 incorporate particular equations. *Id.* cl. 7-8. Claims 10 and 15 claim the monitor's method for measuring blood pressure, and dependent claims 16-17 incorporate specific equations. *Id.* cl. 10, 15-17.

³ Defendants have moved to dismiss the operative Amended Complaint. ECF No. 47. However, Defendants' "original motion to dismiss, though aimed at the first complaint, shall stand as to any alleged defects in the complaint that have survived the amendment." *Cabrera v. World's Finest Chocolate, Inc.*, No. 04 C 0413, 2004 WL 1535850, at *1 n.3 (N.D. Ill. July 7, 2004).

72. The remaining issues raised by the motions to dismiss are now ripe for decision.⁴

II.

Defendants argue that the claims of the '611 Patent should be declared invalid as directed to patent-ineligible subject matter under 35 U.S.C. § 101. Purdue responds, however, that this court is not empowered to invalidate the '611 Patent because Purdue, an arm of the State of Indiana, has not waived its sovereign immunity. ECF No. 51 at 8. Before reaching the substance of Defendants' § 101 question, I turn first to the threshold issue of Purdue's immunity.

The Eleventh Amendment provides: "The Judicial power of the United States shall not be construed to extend to any suit in law or equity, commenced or prosecuted against one of the United States by Citizens of another State . . ." U.S. Const. amend. XI. Eleventh Amendment immunity is waived, however, when a state "consents to federal jurisdiction by voluntarily appearing in

⁴ In the order transferring the case to this court, Judge Springmann denied Defendants' motion to dismiss the Amended Complaint as moot. ECF No. 72. However, because the arguments Defendants continue to assert regarding patent ineligibility and failure to state a claim were fully briefed in the context of that motion, rather than ask the parties to file another set of briefs, I elected to rule upon the motion to dismiss on the merits. ECF No. 94; see ECF No. 91 ¶ 3; see also *Lawrence H. Flynn, Inc. v. Philip Morris USA, Inc.*, No. 05 C 318, 2006 WL 211823, at *2 (N.D. Ill. Jan. 19, 2006) (noting that motions to dismiss under Rule 12(b)(6) had not been "resolved" when they were denied as moot in connection with a venue transfer).

federal court," as Purdue has done by initiating this action. See *Univ. of Fla. Rsch. Found., Inc. v. Gen. Elec. Co.*, 916 F.3d 1363, 1365 (Fed. Cir. 2019) (citation omitted).⁵ The waiver extends "not only to the cause of action but also to any relevant defenses and counterclaims." *Id.* (citation omitted). Purdue argues that an assertion of patent ineligibility under § 101 is not a counterclaim or affirmative defense to patent infringement, so it has not waived its immunity to Defendants' § 101 eligibility challenge. I disagree.

After briefing had concluded on the instant motion to dismiss, the Federal Circuit opined on this very issue in a strikingly similar case, *University of Florida Research Foundation, Inc. v. General Electric Company*. There, a state university research foundation sued for patent infringement, then asserted sovereign immunity when the defendant argued that the patent was directed to ineligible subject matter under § 101. 916 F.3d at 1364. The Federal Circuit held that a challenge to eligibility under § 101 qualifies as a defense to patent infringement both under the

⁵ Federal Circuit law governs substantive issues of patent law, as well as any substantive or procedural issues "intimately involved in the substance of enforcement of the patent right." *Medline Indus., Inc. v. C.R. Bard, Inc.*, 14 CV 3618, 2016 WL 307310, at *2 (N.D. Ill. Jan. 26, 2016) (citing *Flex-Foot, Inc. v. CRP, Inc.*, 238 F.3d 1362, 1365 (Fed. Cir. 2001)). Accordingly, Federal Circuit law applies to questions of sovereign immunity raised in patent cases. *Bd. of Regents of the Univ. of Tex. Sys. v. Bos. Sci. Corp.*, 936 F.3d 1365, 1374 (Fed. Cir. 2019), cert. denied, 140 S. Ct. 2673 (2020).

statutory framework and as a matter of common practice. *Id.* at 1365. As a result, it determined that the plaintiff had waived its immunity to the § 101 eligibility challenge when it sued for patent infringement in the district court. *Id.* at 1366. For precisely the same reasons, Purdue has waived Eleventh Amendment immunity here.

Purdue also argues generally that this court "does not have authority to eradicate a state-owned property right." ECF No. 51 at 9. But the only case Purdue cites in support, *Florida Prepaid Postsecondary Education Expense Board v. College Savings Bank*, concerns the constitutionality of a statutory abrogation of sovereign immunity, and does not offer any support for the proposition that a patent owned by a state cannot be invalidated if it is directed to patent-ineligible subject matter. 527 U.S. 627, 630 (1999). Indeed, state-owned patents are routinely invalidated by federal courts. See, e.g., *Univ. of Fla.*, 916 F.3d at 1369.

Purdue also maintains that even if it waived its Eleventh Amendment immunity, it is protected by Indiana's broad, general sovereign immunity, which applies in actions brought in both federal and state court. See *Beaulieu v. Vermont*, 807 F.3d 478, 483 (2d Cir. 2015) (distinguishing between Eleventh-Amendment and general sovereign immunity). Defendants counter that just as in the context of the Eleventh Amendment, general sovereign immunity

is waived when a lawsuit is initiated by the state. See *id.* (noting that both types of immunity may be waived). If a state were allowed to simultaneously invoke and shield itself from a court's jurisdiction, Defendants argue, it "could generate seriously unfair results," which the Supreme Court has cautioned against in the context of Eleventh Amendment immunity. See *Lapides v. Bd. of Regents of Univ. Sys. of Ga.*, 535 U.S. 613, 619 (2002). However, I need not resolve the question of whether Purdue has general sovereign immunity that protects it from Defendants' § 101 eligibility challenge because, for the reasons outlined below, I decline to hold that the '611 Patent's claims are invalid. See *Hester v. Ind. State Dep't of Health*, 726 F.3d 942, 946 (7th Cir. 2013) (declining to rule on question of sovereign immunity where claim failed on merits).

III.

Section 101 of the Patent Act defines the subject matter eligible for patent protection as follows: "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. The section, however, "contains an important implicit exception: Laws of nature, natural phenomena, and abstract ideas are not patentable." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 573 U.S. 208, 216 (2014) (citing *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 589 (2013)). Courts recognizing

this exception have been motivated by preemption: laws of nature, natural phenomena, and abstract ideas are "the basic tools of scientific and technological work" such that "[m]onopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it." *Id.* (citations omitted). However, "[a]t some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.'" *Id.* at 217 (citing *Mayo Collaborative Servs. v. Prometheus Laboratories, Inc.*, 566 U.S. 66, 71 (2012)). Accordingly, courts must "tread carefully in construing this exclusionary principle lest it swallow all of patent law." *Id.*

In *Alice Corp. Pty. Ltd. v. CLS Bank International*, the Supreme Court set forth a two-step analytical framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those claiming patent-eligible subject matter. 573 U.S. at 217. First, courts must determine whether the claims at issue are "directed to" patent-ineligible concepts. *Id.* If they are not, that is the end of the inquiry. See *Illumina, Inc. v. Ariosa Diagnostics, Inc.*, 967 F.3d 1319, 1325 (Fed. Cir. 2020). If they are, courts proceed to step two, which asks whether the claims contain additional "inventive concept[s]" that, either individually or in combination,

“‘transform the nature of the claim’ into a patent-eligible application.” *Alice*, 573 U.S. at 217-18.

Defendants contend that the ‘611 Patent claims are ineligible under both steps of the *Alice* test. Turning first to step one, Defendants argue that the ‘611 Patent is “directed to” a natural law—that systolic blood pressure is a function of both maximum oscillation amplitude and mean cuff pressure. The physical components described in the claims at issue—the cuff, the pump, the pressure transducer, and the measurement circuit—are all conventional in the field of oscillometry, they contend, so the only real innovation inherent in the patent is the mathematical function. Defendants argue that because the claims are based on this natural law, they are patent ineligible under *Alice* step one.

In support of their position, Defendants cite several cases in which medical or biological patents were invalidated after they were found to be directed to patent-ineligible concepts at *Alice* step one. ECF No. 48 at 19. In *Cleveland Clinic Foundation v. True Health Diagnostics LLC*, for example, the Federal Circuit invalidated patent claims that disclosed a method for detecting, using conventional laboratory techniques, a certain enzyme in the blood and correlating the results to cardiovascular risk. 859 F.3d 1352, 1355, 1361 (Fed. Cir. 2017). The court held that the claims were directed to a patent-ineligible law of nature: “the relation [between cardiovascular disease and heightened MPO levels

that] exists in principle apart from human action." *Id.* at 1361. Defendants also cite *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371 (Fed. Cir. 2015). In that case, two researchers had discovered that cell-free fetal DNA was present in maternal plasma and serum, the portion of maternal blood samples that had previously been discarded as medical waste. *Id.* at 1373. The researchers obtained a patent describing a method for detecting that fetal DNA using known laboratory techniques. *Id.* at 1373, 1377. The Federal Circuit held that the claims at issue were directed to a natural phenomenon: "the existence of cffDNA in maternal blood." *Id.* at 1376.

The cases cited by Defendants are distinguishable, however. Unlike the patents in those cases, the '611 Patent does not simply describe a method for detecting or observing a natural phenomenon.⁶ Rather, it describes a mathematical improvement to the

⁶ Indeed, I would quibble with the characterization that the function at issue is a "natural law" at all. It does not describe the precise natural relationship between maximum oscillation amplitude, mean cuff pressure, and systolic blood pressure—rather, it provides only an estimation of systolic pressure (though a relatively accurate one). Nor do the variables of maximum amplitude and mean cuff pressure "exist[] in principle apart from any human action." *Mayo*, 566 U.S. at 77. The variables come into existence only in connection with a human-created measurement technique—oscillometry. The mathematical function is likely more properly categorized as an "abstract idea." See *Alice*, 573 U.S. at 218 (citing cases in which formulas or algorithms were held patent ineligible as abstract ideas). However, for purposes of the *Alice* analysis, this is a distinction without a difference.

functionality of a blood pressure monitor or a blood pressure measurement method.

In the technology context, courts have held that abstract improvements to a computer's functionality (as distinguished from abstract ideas that are simply implemented by computers) are not "directed to" patent-ineligible subject matter. In *Enfish, LLC v. Microsoft Corp.*, for example, the Federal Circuit was confronted with patents describing an innovative self-referential logical model for a computer database. 822 F.3d 1327, 1330 (Fed. Cir. 2016). The district court had invalidated the claims as directed to the abstract idea of "storing, organizing, and retrieving memory in a logical table." *Id.* at 1337. But the Federal Circuit disagreed, holding that the claims were "directed to a specific improvement to the way computers operate" and thus met the requirements of § 101. *Id.* at 1336. The court explained that "[t]he 'directed to' inquiry" under *Alice* step one was "a meaningful one," and required consideration of more than whether the claims "involve[d]" a patent-ineligible concept. *Id.* at 1335. Because the claims at issue improved upon an existing technological process, the court held that their "character as a whole [was not] directed to excluded subject matter." *Id.*

Similarly, in the medical or biological context, the Federal Circuit has held that patents that create or improve upon useful processes are not "directed to" abstract ideas under *Alice* step

one.⁷ In *Rapid Litigation Management Ltd. v. CellzDirect, Inc.*, for example, inventors discovered that a certain type of liver cell was capable of surviving multiple freeze-thaw cycles, and patented an improved process of freezing and preserving those cells in light of that discovery. 827 F.3d 1042, 1045 (Fed. Cir. 2016). The Federal Circuit held that the patent claims were not directed to the law of nature that the cells could survive multiple freeze-thaw cycles, but rather "to a new and useful method of preserving" the cells. *Id.* at 1048 (distinguishing cases where the claims "amounted to nothing more than observing or identifying the ineligible concept itself"). In *Illumina, Inc. v. Ariosa Diagnostics, Inc.*, inventors discovered that "cell-free fetal DNA tends to be shorter than cell-free maternal DNA in a mother's bloodstream." 967 F.3d at 1326. The Federal Circuit held valid patent claims describing a method of separating cell-free fetal DNA from maternal blood based on the size of the DNA fragments, even though the method utilized conventional laboratory techniques. *Id.* at 1328-29. It did so because it found that the

⁷ Of course, the process "must be more than a drafting effort designed to monopolize the law of nature itself"; it must recite more than a statement of the law of nature with the added instruction "apply the law." *Mayo*, 566 U.S. at 77-78. But that is exactly what the '611 Patent does—the inventors "employed their natural discovery to create a new and improved way" to measure blood pressure, which is "precisely the type of claim that is eligible for patenting." See *Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1048 (Fed. Cir. 2016).

claims were directed not to the natural phenomenon that the DNA lengths tended to differ, but to a novel method of DNA preparation. *Id.*

Unlike in the cases relied upon by Defendants, the '611 Patent claims at issue here do not simply describe a method for observing or detecting a natural phenomenon. Instead, they claim an improvement upon an existing medical process—the process of calculating systolic blood pressure using the oscillometric method. That the claims involve a mathematical idea does not suffice to invalidate them under § 101. Rather, because they are directed to an improvement in the functionality of a useful device and process, I conclude that they are not directed to patent-ineligible subject matter.

Because I have determined that the claims are not "directed to" patent-ineligible subject matter at *Alice* step one, I need not continue to step two. See, e.g., *Illumina*, 967 F.3d at 1329.

For the foregoing reasons, I decline to hold the claims at issue invalid under § 101.

IV.

Defendants argue next that Purdue's complaint fails to state a claim under Federal Rule of Civil Procedure 12(b)(6). Particularly, Defendants argue that Purdue's complaint fails to adequately show that Defendants' blood pressure monitors actually use the patented equation to calculate systolic blood pressure.

Purdue's allegations, they contend, "show only that pressure readings can be taken from Omron's accused products . . . and that data points from those readings can be applied to the patented equation." ECF No. 48 at 23.

With its complaint, Purdue included tables comparing the systolic pressure reading from each accused product to blood pressure calculated using the patented equation, as well as to blood pressure calculated using various prior art approaches. See, e.g., ECF No. 31-25 at 11. For many products, the pressure readout from the accused product aligned more closely with the pressure calculated using the patented equation than with the pressures calculated using the prior art approaches. But Defendants point out that that was not the case for every product. Further, they note that the accused products' readings are sometimes higher and sometimes lower than the pressure calculated with the patented equation, which would suggest, they argue, that the accused products are not using the patented equation, at least not with the same constants.

To survive a motion to dismiss, a complaint need only "state a claim to relief that is plausible on its face." *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (citing *Bell Atlantic Corp. v. Twombly*, 550 U.S. 544, 570 (2007)). "[T]he plausibility standard is not akin to a 'probability requirement.'" *Id.* "In other words, the court will ask itself *could* these things have happened, not

did they happen. . . . [I]t is not necessary to stack up inferences side by side and allow the case to go forward only if the plaintiff's inferences seem more compelling than the opposing inferences." *Swanson v. Citibank, N.A.*, 614 F.3d 400, 404 (7th Cir. 2010).

Purdue has here alleged that the accused products infringe one or more claims of the '611 patent. ECF No. 31 ¶¶ 133, 135. It has submitted detailed claim charts for each accused product, providing a plausible factual basis for Purdue's infringement allegations. *See, e.g.*, ECF No. 31-25. Accordingly, "[Purdue] has submitted enough information in its Amended Complaint to put [Defendants] on notice of what it alleges." *Cascades Comput. Innovation, LLC v. Sony-Ericsson Mobile Commc'ns (USA) Inc.*, No. 11-CV-7223, 2012 WL 1377053, at *2 (N.D. Ill. Apr. 18, 2012). I decline Defendants' invitation to "stack up inferences" to determine whether infringement or noninfringement is more probable at this stage of proceedings. *See id.* at *2-3 (denying motion to dismiss patent infringement claim where defendant argued that plaintiff had not shown defendant's smartphones actually used the software code described by the patent).

For the foregoing reasons, Defendants' motion to dismiss [47] is denied.

ENTER ORDER:



Elaine E. Bucklo

Elaine E. Bucklo
United States District Judge

Dated: December 4, 2020